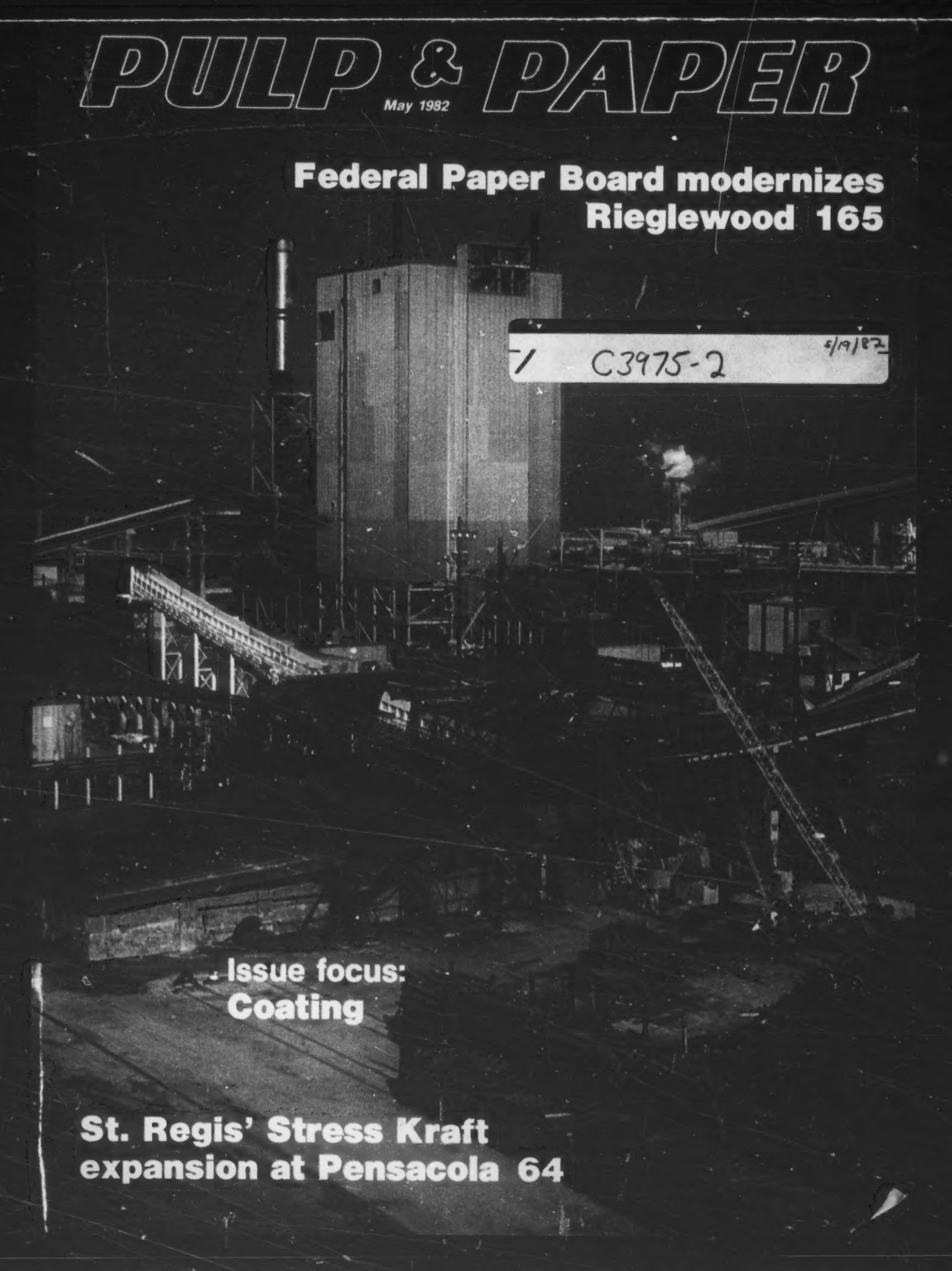
PULP & PAPER

May 1982

Federal Paper Board modernizes Rieglewood 165



C3975-2 5/19/82

Issue focus:
Coating

St. Regis' Stress Kraft expansion at Pensacola 64

PULP&PAPER

Volume 56 Number 5 May 1982

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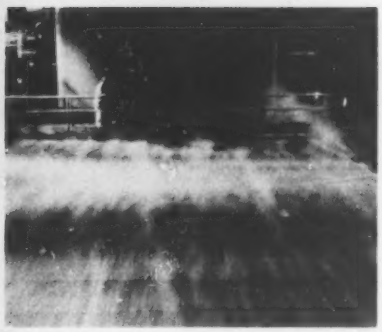

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Cover: Federal Paper Board's recent expansions at Riegelwood, N.C., include a new long log woodyard and 1500-tpd recovery boiler. (Staff photo by Kenneth E. Smith.)

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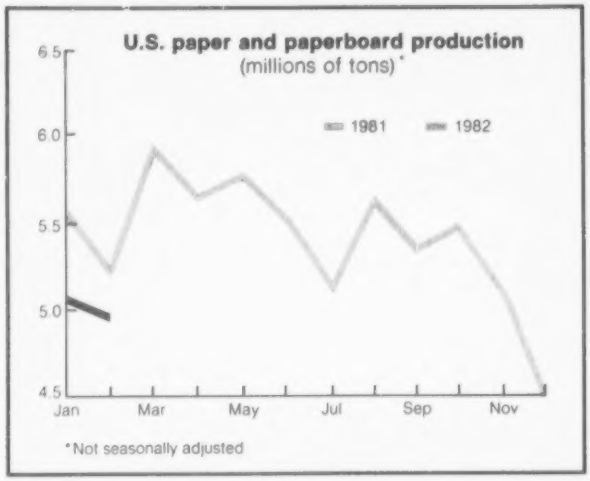
MONTH IN STATISTICS

U.S. paper and paperboard production continued to slow in February, totaling about 5.0 million short tons in the month, 4% below year-earlier production levels, according to the American Paper Institute. Adjusted for seasonal and workday factors, February production was at a 62.4-million-tpy annual rate, up from the 60.9-million-tpy rate estimated for January.

Among major grades, only newsprint production remained strong in February, up 6% over year-earlier levels. All other paper grades continued to fall below 1981 output levels, with a large decline in uncoated groundwood paper production, reflecting reductions in shipments to "other periodical" publishers and commercial printers, said API. Paperboard production, still harder hit than paper, registered year-to-year declines ranging from 3% for solid bleached to 8% for semichemical medium.

Total Canadian newsprint shipments in February came to 709,000 metric tons, up 3.7% over a year earlier, according to the Canadian Pulp & Paper Assn. Newsprint mill operating rates were 93%, down from 95% a year earlier. Chemical paper-grade woodpulp shipments came to 480,000 tons, down 15.3% below February 1981 levels. Operating rates were 83%.



		Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION[1]					
Newsprint	February	416	5.9	5,244	7.8
Uncoated groundwood (s)	February	106	−7.0	1,288	−11.4
Coated paper (s)	February	374	−4.3	4,667	−4.7
Uncoated free sheet (s)	February	610	−2.7	7,541	−2.3
Unbleached kraft packaging and industrial (s)	February	300	−7.1	3,655	−7.7
Tissue	February	335	−5.1	4,133	−5.6
Total paper	**February**	**2,401**	**−2.1**	**29,642**	**−2.3**
Kraft linerboard, unbleached	February	1,154	−1.6	13,367	−7.6
Semichemical medium	February	357	−8.2	4,398	−8.0
Bleached paperboard	February	301	−3.2	3,649	−6.9
Recycled paperboard	February	551	−5.3	6,630	−8.5
Total paperboard	**February**	**2,448**	**−3.6**	**29,135**	**−7.5**
Total paper and paperboard*	**February**	**4,983**	**−3.8**	**60,418**	**−5.8**
PULP, WASTEPAPER & FIBER[2]					
Total woodpulp production	January	3,991	−8.8	47,897	−8.8
Market pulp production	January	425	−17.7	5,096	−17.7
Wastepaper consumption at paper/board mills	January	1,218	−8.1	14,616	−8.1
Pulpwood consumption (cords)	February	6,396	−4.5	76,752	−4.5
CONVERTED PRODUCTS STATISTICS[3]					
Corrugated box shipments (billion ft²)	February	18.638	−6.4	37.593†	−9.0
Containerboard inventories at box plants	Feb. 1	2,545	39.1		
INTERNATIONAL TRADE[2]					
U.S. paper imports (including products)	January	675	−1.1	8,104	−1.1
Imports of Canadian newsprint	January	581	−0.2	6,975†	−0.2
U.S. paper exports (including products)	January	309	−18.6	3,705	−18.6
Exports of unbleached kraft linerboard	February	165	−1.8	1,782	4.1
Exports of woodpulp	January	221	−24.1	2,655	−24.1
CANADIAN STATISTICS[4] (reported in metric tons)					
Total newsprint shipments	February	709	3.7	1,380†	0.1
Operating rates	February	93%	95%	93%	94%
Inventories held by U.S. consumers	Feb. 28	1,634	32.4		
Woodpulp shipments (export only)	February	480	−15.3	931†	−16.1
Operating rates	February	83%	90%	83%	90%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fiber Box Assn., Paperboard Packaging Council. 4. Canadian Pulp & Paper Assn.
*Includes construction and wet machine grades. †Not annualized. ‡Not directly comparable to year ago because of coding change. (s) = shipments.

$368 million for pollution in 1980

1980 capital spending for environmental control by the pulp and paper industry reached $368 million, or 9% of the industry's total 1980 capital spending, according to the National Council of the Paper Industry for Air & Stream Improvement Inc. NCASI based its findings on a survey of the industry taken last year, which not only recorded 1980 spending but also projected spending in 1981 and 1982.

The paper industry spent the largest portion of its 1980 outlays on air-quality protection—$190 million. Total spending for water-quality protection, both process-loss control and external effluent management lines, came to $140 million, and spending for mill-site-generated solid waste management came to $38 million (see table).

As a percentage of total capital spending, 1980 pollution control outlays were the lowest in the last ten years, according to the survey. Since mid-decade, pollution control spending has steadily declined both in terms of total dollars and as a percentage of total spending.

NCASI also pointed out that 1981 spending projections were even lower than 1980's level, but that estimates for 1982 and beyond indicate an upward trend in environmental spending beginning in 1982. This higher spending will be necessary, NCASI noted, because water-quality regulations calling for major expenditures will be in place by 1984, imposing solid-waste disposal regulations are currently taking form, and an increasing emphasis is being placed on volatile organic emission control and reduced sulfur emission control at kraft mills.

Pulp and paper industry environmental spending through 1980 and planned through 1981
(Million dollars)

	Water	Air	Solid waste	Total	% of total spending
1970	120	65	2	187	
1971	134	66	3	203	
1972	205	129	5	339	36
1973	179	162	10	351	34
1974	216	296	11	523	31
1975	266	341	18	645	30
1976	319	216	29	564	29
1977	278	148	17	443	19
1978	182	149	32	363	16
1979	178	158	23	359	12
1980	140	190	38	368	9
1981e	87	152	59	298	

e = estimate.
Source: NCASI.

MERGERS

ITT having no luck selling Rayonier unit in 'buyer's market'

International Telephone & Telegraph Corp. has had no luck in its six-month-long bid to sell its Rayonier unit, and current economic conditions along with the state of the forest products industry will "make it very difficult to accomplish a sale" soon, ITT chief financial officer Cabell Woodward Jr. said recently.

ITT had hoped to get $3 billion from the sale of its four active mills, seven lumber mills and 1.1 million acres of timberlands, but one analyst noted that "it's no longer a seller's market in timber" while another said that only the 430,000-tpy Jesup, Ga., kraft pulp mill is really a prime property among the mills. In one analyst's words, "I guess they just didn't get an offer that they thought was good enough."

The conglomerate announced in September it would be willing to sell its Rayonier subsidiary (P&P, Nov., p. 13) after having said in early 1981 that it had no intentions of selling the unit. Then in November, Woodward said the company might be willing to break up Rayonier and sell it in parts. At the same time ITT also indicated it was in the midst of serious discussions with a major buyer. But that deal never materialized.

Prime property: ITT's Jesup, Ga., kraft pulp mill.

G+W buys Hammermill stake

Gulf + Western Industries Inc., which only recently sold off Brown Co., has disclosed purchasing a 5.8% interest in another paper firm—Hammermill Paper Co. In a filing with the Securities & Exchange Commission, G+W said it bought 474,600 Hammermill shares for about $12.2 million, strictly for investment purposes.

• **Meanwhile, Dorchester Gas Corp.** disclosed it holds about 1.7 million common shares of **St. Regis Paper Co.** purchased at a cost of about $52 million. The company said it considers St. Regis an "excellent investment" and may purchase more stock.

• **Louisiana-Pacific Corp.** has boosted its stake in **National Gypsum Co.** to 11.2% from 8.8% reported in late January. Altogether, L-P holds 1.73 million National Gypsum common shares, the company told the SEC.

Jim D. Rowland *is editor of* Canadian Paper Analyst, *a monthly newsletter based in Montreal, Que.*

Newsprint: The bloom is off the rose

After five consecutive years of improving profitability (aided in no small way by the drop and continued weakness in the value of the Canadian dollar), Canadian newsprint producers will face a very difficult operating environment in 1982. Lower operating rates, significant cost increases, and relatively little price relief will bring about a drop of at least 25% in the pre-interest, pre-tax profit per metric ton. In the worst case scenario, the drop could reach 50%.

The most important variable is the industry operating rate. Because of larger-than-normal capacity increases in North America, combined with a slowing in demand, the Canadian newsprint industry operating rate will probably fall in the 80% to 84% range (Table 1). This is the lowest level since 1975, when 20% of the annual productive capacity was shut down by a major strike.

Three newsprint machines will be starting up in 1982 and will obviously face more than the usual difficulties in marketing their tonnage. The new machines are at Crown Zellerbach, Elk Falls, B.C., and Donohue Normick, Amos, Que. (both scheduled to start up in the first quarter), and British Columbia Forest Products, Crofton, B.C. (at mid-year).

Canadian producers have announced a $25/metric ton, or 5%, increase for Mar. 1 or Apr. 1 for U.S. customers. But the increase may not be fully effective until this summer due to currently high inventory levels (57-day supply) and the 500,000 tpy of new newsprint capacity entering the North American market over the next several months (the three Canadian machines plus a machine conversion in the U.S.).

In this rather bleak environment, the Canadian newsprint industry is also looking at sigificant cost increases for all factors of production. Table 2 is an industry composite profit-and-loss statement for the 1979-82 period. The "gross selling price" and "transportation, etc." reflect a composite of the estimated Canadian dollar amounts for newsprint shipments to the three main market areas—Canada, the U.S., and offshore.

Table 2 is the "best-case" scenario, assuming an 84%+ operating rate, no inordinate cost increases (particularly for labor costs), and a Canadian dollar averaging at least a 20% discount from the U.S. dollar. Any change in these assumptions running counter to the best interest of the industry would correspondingly reduce the $75 pre-interest, pre-tax profit per metric ton. In short, 1982 will be, at best, a lackluster year; at worst, it could be an unmitigated disaster.

Table 1. **Canadian newsprint industry shipments, capacity, operating rates, 1979-82** (000 metric tons)

	1979*	1980*	1981*	1982e
Capacity	9,063	9,130	9,445	10,000
Production	8,756	8,625	8,946	8,000-8,400
Operating rate	97%	94%	94%	80%-84%
Shipments,	8,779	8,662	8,916	8,000-8,400
To Canada	971	980	1,045	1,040-1,060
To U.S.	6,371	6,118	6,062	5,410-5,690
To offshore	1,437	1,524	1,809	1,550-1,650
U.S. consumption	10,199	10,066	10,139	9,900-10,200

*In 1979, about 3% of capacity was lost as a result of strike activity; 1980 about 5%; 1981 about 3%. e = estimated.

Table 2. **Canadian newsprint industry composite profit-and-loss statement** (C$/metric ton)

	1979	1980	1981	1982
Gross selling price	480	500	500	500
Transportation, etc.	60	65	70	80
Net selling price	420	440	430	420
Fiber	90	100	112	125
Other supplies	40	44	50	60
Energy	45	51	60	70
Wages and salaries	85	95	100	125
Overhead	40	45	50	65
Total cost	300	335	360	445
Pre-interest, pre-tax profit/metric ton	120	105	110	75

Source: Canadian Paper Analyst

Coated groundwood papers: No growth, operating rates dropping off

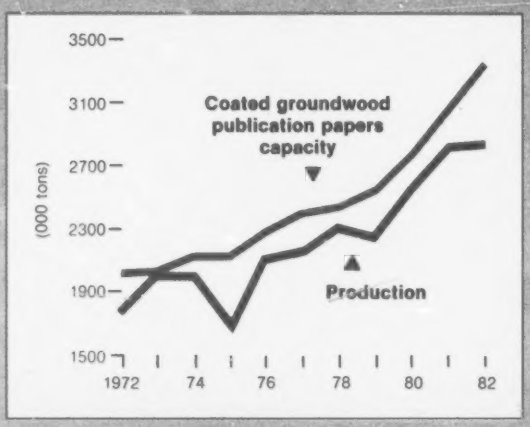
Statistics	1980	1981	1982e
Production, 000 tons[1]	2555	2804	2845
Capacity, 000 tons[2]	2762	3081	3364
Utilization rates, %	92.5	91.1	84.6
Imports, 000 tons	110	35	20
Exports, 000 tons	45	46	45
Apparent U.S. consumption			
000 tons	2620	2793	2820
lb/capita	23.54	24.85	24.83
000 tons/$billion real GNP (1972)	1.769	1.852	1.868

e=estimated
1. PULP & PAPER estimates.
2. API, capacity for coated groundwood grades; includes coated grades Nos. 5 and some of 4.

Grade structure: Coated groundwood publication paper is made from furnish containing 10% or more of mechanical pulp, with the balance consisting of chemical pulp. The group includes No. 5 paper and some No. 4, both coated-two-side. No. 4 has slightly higher quality and brightness standards, and much No. 5 is lower in basis weight than No. 4 paper. Basis weights commonly range between 32 lb to 70 lb (25 x 38 in.—500). These papers are used for rotogravure, letterpress or offset printing. Coat weight can represent up to 30% of total sheet weight in the case of lightweight coated (LWC) paper.

Production/capacity: Production continued the dramatic increases of recent years, jumping by 9.7% in 1981, according to PULP & PAPER estimates (American Paper Institute does not release production figures for coated groundwood). During that same period, capacity shot up by 11.5%—with another 9.2% increase in capacity planned for 1982. Three machines, with 543,000 tpy of capacity between them, are starting up in mid-1982, the last additions currently announced, and by the time they are fully absorbed, capacity between 1980 and 1984 will have jumped by 37.8%.

Outlook: Magazine advertising is expected to flatten out in 1982, and the other recent growth items for these papers—direct mail pieces and catalogs—may grow more slowly than in recent years as companies respond to weak consumer spending by weeding names out of mailing lists. If coated groundwood shows any growth in consumption in 1982, it will be because it continues to capture market share from uncoated groundwood while acting as a last resort for printers unable to get coated free-sheet for some jobs. The prospect beyond the current recession is for fast growth of coated groundwood, but operating rates will remain low enough for several years to cause problems when price increases are proposed.



Estimated 1982 capacities of major U.S. companies are:

	Annual capacity (000 tons)	Capacity share (%)
1. International Paper Co.	450	14.9
2. St. Regis Paper Co.[1]	423	14.0
3. Consolidated Papers	411	13.6
4. Blandin Paper	305	10.1
5. Crown Zellerbach	280	9.3
6. Boise Cascade	280	9.3
7. Nitec & Midtec Corps.	260	8.6
8. Fraser Paper Ltd.	160	5.3
9. Pentair Industries	160	5.3
10. Bowater Inc. (Bowater Carolina)	120	4.0

[1]Does not include new 168,000-tpy machine to start up around mid-year.

U.S. No. 5 capacity (1982): **3.014 million tons**
Capacity share of top five companies: 62.0%
Capacity share of top ten companies: 94.5%

Coated groundwood publication papers also include some No. 4 coated publication papers. The major producers of No. 4 are Mead Corp., Consolidated Papers, and Nitec & Midtec Corps.

Pricing: Prices did not rise between April 1981 and April 1982 and no increases were expected this year before October. The last increase that did stick was only partially successful, resulting in a year-to-year increase of 3.4%. Typical pricing trends ($/short ton) are: 1973, 285; 1974, 400; 1975, 385; 1976, 460; 1977, 500; 1978, 570; 1979, 637; 1980, 673; 1981, 735; and 1982, 760.

Markets: About 63% of No. 5 paper goes into magazines, with commercial printing taking another 17%, and catalogs accounting for 13%.

Upturn for the U.S. pulp and paper industry still seen in second half

High interest rates and looming budget deficits cause uncertainty about sustained recovery, but speakers at API Paper Week still see recovery ahead

PULP & PAPER STAFF REPORT

☐ Despite recent economic weakness, high interest rates, and large projected federal budget deficits, most speakers at the American Paper Institute's National Paper Week convention held in New York City in mid-March sounded an optimistic note about the chances for a pickup in pulp and paper demand in the second half.

"The expected recovery in business activity in the second half of the year will propel paper and paperboard production upward," API president **Louis F. Laun** said in opening remarks that were later echoed by other industry speakers. "With other industrial countries probably joining the recovery in 1983, export demand can add an additional increment to overall shipments of the industry," he added.

Forces for a recovery may already be in place, with business inventories declining, inflation abating, and a tax cut scheduled to take effect July 1 which will increase consumer spendable income, said API senior vice president **Norma Pace**. Nevertheless, she said insufficient liquidity and high interest rates will hold industrial production to a 2.4% rise in 1982 before a 7.9% jump forecast for 1983.

But **Sen. Pete V. Domenici** (R-N.Mex.) warned that a sustained recovery may not be achievable even in 1983 unless there is a change in the current Administration budget, under which the federal deficit may shoot up to $208 billion by 1985. "Deficits of the size projected could devastate our economy and drag down the economies of all other industrialized nations," he said.

Production picked up in February

"The close link between the economy and the paper industry was reconfirmed last year and is continuing in 1982," Laun said. "Production of paper and paperboard in 1981 was 1.2% above the 1980 level, almost the same as the growth in real gross national product (GNP)."

"The quarterly patterns in paper and real GNP were also similar; a strong first quarter was followed by a mild decline in the second quarter, renewed strength in the third, and a relatively sharp decline in the final quarter," he continued. "Production remained low in January 1982, but then strengthened in February."

Among individual grades, the most notable performance so far this year is in newsprint, Laun said. "Newsprint production is running well above year-ago levels, reflecting an increase in domestic newsprint capacity, higher exports, and a buildup in publisher inventories."

"Production of uncoated free sheet papers, which includes most of the paper used in offices, is holding close to year-ago levels, which is a remarkable performance in view of reduced business activity," the API president said. "Commercial printers—another major user of free sheet papers—are also maintaining their pace of orders at a fairly good level."

Tissue papers continue their modest growth, paced by population changes, he said.

"Packaging grades, on the other hand, are feeling the effects of the recession," according to Laun. Production of packaging and industrial converting grades of paper is below 1980-81 average levels. Strong competition with plastic films is part of the reason, as well as reduced output in many customer industries.

Paperboard production declined sharply in December 1981, with many producers extending their usual year-end closings. Production in January was also low. Inventories of containerboard at box plants increased 550,000 tons in 1981, which brought the weeks of supply to 8.4, a fairly high level, he noted. A correction is underway, and inventories declined 180,000 tons in January. Some of the downward pressure eased in February, and paperboard production advanced.

Upturn ahead for printing/writing?

Leading indicators point to a "cyclical upturn in the demand for printing/writing papers" before June, with shipments continuing to improve "through the end of 1983," according to **James L. Hutchison**, API vice president-paper group.

Hutchison pointed out that "during the last 30 years, a change in the direction of printing/writing paper shipments has consistently occurred after a similar move in

housing." Printing/writing paper demand has turned up on the average, three to six months after an improvement in new housing permits—and permits appear to have turned around after an October trough, he said.

Another positive indicator is the 36% increase reported in February of purchasing agents experiencing slower deliveries of ordered products.

If API economic forecasts and "the continued growth in these papers relative to GNP" are considered, consumption of uncoated free sheet in the fourth quarter of 1983 should be running at an 8.6-million-tpy rate, up 10.3% from the 7.8-million-tpy rate of the first period of 1982, while the coated paper rate should rise 10.9% to 5.38 million tpy from 4.85 million.

In recent years, printing/writing paper demand has grown faster than the economy as a whole. With the help of an increase in coated groundwood capacity, the U.S. shifted from being a net importer of coated groundwood in 1979, to the tune of 150,000 tons, to being a net exporter in 1981 by 7000 tons. This accounted for about half of the 15.2% increase in coated No. 5 shipments during that two-year period, he noted.

Uncoated free sheet also outpaced the economy in recent years, and between 1979 and 1981 shipments of bond and writing paper jumped by 6.8%—in contrast with the 4.0% rise of coated free sheet.

Pulp stocks continue to climb

Market pulp inventories continued to climb in late February and North American and Scandinavian stocks neared 1.7 million metric tons at the end of the month, said **Dr. Ronald J. Slinn**, API vice president-pulp, materials and technology group. U.S. producers held 22% of that total; Sweden, 31%; Canada, 33%; Finland, 13%; and Norway, 1%.

"This total inventory on Feb. 28 represented 46 days of supply at the rate of shipments over the preceding three months, in contrast to 30 days of supply a year earlier and 11 days when the combined North American and Nordic producers' level was at its most recent lowest level in December 1979," he noted. But that is still a long way from the nearly 3 million metric ton level of February 1977, he added.

While avoiding a prediction about the timing of any upturn, Slinn noted that the cycles of the Norscan pulp industry over the last 11 years point to a period between peaks and valleys of 2 years and 9 months—with the next peak due in August or September, if that pattern holds.

Adding to the uncertainty, however, are fluctuations in the value of the dollar, the currency in which most pulp is sold on the world markets, whose movements have a direct impact on pulp purchasers' costs and pulp producers' revenues.

"Compared with 18 months ago, when the U.S. dollar was at its lowest recent rate of exchange against most major currencies, a Mexican pulp importer would today require 96% more pesos to acquire a U.S. dollar for his purchase," Slinn noted. "Likewise, an Italian would pay 50% more lire than he did 18 months ago. On the other hand, a U.S. dollar can be exchanged for 28% more Swedish kroner or 20% more Finnish markka than in the fall of 1980."

Another imponderable in the pulp market outlook is upcoming labor talks this year involving 3500 tpd of U.S. paper grade market pulp capacity and 1900 tpd of capacity in Canada, where most contracts expire Apr. 30. The outlook for negotiations in eastern Canada, where workers have demanded parity with those at western mills, is "not bright," Slinn said.

In a statistical profile of the industry, Slinn noted the U.S. is a significant pulp importer and exporter as well, having produced almost 46 million metric tons in 1981; 86% of that consumed on-site; 5% shipped to affiliated domestic mills; 4% to the domestic market; and 5% shipped overseas. At the same time, the U.S. industry's apparent consumption was more than 47 million tons; 84% from integrated sources in the U.S.; 4% from the domestic market; and 7%—including "tied shipments from Canada"—coming in the form of imports (see Table 1). The net result of this balance is that the U.S. consumed 1.2 million tons more than it produced.

Current capital spending plans are unlikely to alter that balance, Slinn noted, although "beyond 1984, there is a distinct prospect that the U.S. industry could achieve a larger degree of fiber self-sufficiency and, therefore, a potentially higher level of pulp exports."

Consumption of wastepaper up

"Despite problems affecting many sectors of the nation's economy, increased use of wastepaper in the U.S. and the overall increase in total collections were surprising and encouraging," said **J. Rodney Edwards**, API vice president-paperboard group.

Consumption of wastepaper at U.S. paper and paperboard mills reached an all-time record of 15.56 million tons in 1981, up 469,000 tons from 1980 and 43,000 tons over 1979, the previous record year. Exports declined by 452,000 tons to 2.21 million in 1981. Therefore, total col-

Table 1. **U.S. chemical paper grade market pulp consumption**

	1970		1981	
Market grade	**Metric tons** (000)	**% of total**	**Metric tons** (000)	**% of total**
Sulfite	570	17	295 (241)*	7 (6)*
Bl. swd kraft	2490	73	3040 (3018)	67 (69)
Bl. hwd kraft			990 (982)	22 (22)
Unbl. kraft	325	10	177 (149)	4 (3)
Totals	**3385**	**100**	**4502 (4390)**	**100 (100)**

* 1980 production and consumption.

Source: American Paper Institute

Table 2. **U.S. wastepaper recovery 1981-80**
(000 short tons)

	U.S. paper/paperboard mill consumption*	Exports	Consumption for other uses	Total
		1981		
News	2576	425	300	3301
Corrugated	7157	991		8149
Mixed	2322	474		2796
High grade deinking		130		
and pulp substitutes	3507	192		3830
Totals	**15,563**	**2213**	**300**	**18,076**
		1980		
News	2564	425	300	3289
Corrugated	6866	1209		8075
Mixed	2268	649		2917
High grade deinking	1142	176		1318
Pulp substitutes	2254	204		2458
Totals	**15,094**	**2664**	**300**	**18,058**

*Includes consumption at plants making molded pulp products.

Source: American Paper Institute; U.S. Bureau of Census (export data).

lections to meet domestic and export demand were only up slightly to 18.08 million tons in 1981, compared to 18.06 million tons in 1980 (see Table 2).

Based on just over 68 million tons of paper and paperboard used last year, the wastepaper collection rate for 1981 was 26.6%, according to Edwards.

"Projections for the use of recyclable paper in 1982 will continue to depend largely on the nation's economy, particularly on the demand for packaging, tissue products, and newsprint," he noted. "In addition, if production of autos and building of houses remain at low levels, use of wastepaper will be reduced."

In 1981, recycled paperboard accounted for 42% of wastepaper consumption compared to more than 70% in 1970. "From 1970 to 1981, however, annual production of recycled paperboard remained relatively constant, while there was a significant increase in the use of wastepaper at mills making containerboard, newsprint, and tissue products," Edwards said.

Total collection of old newspapers in 1981 was 3.3 million tons, indicating about 30% of the newspapers published in the U.S. are collected for recycling.

Collection of used corrugated in 1981 was 8.1 million tons, of which 1.9 million was corrugated box plant clippings. The remaining 6.2 million tons of used boxes represent a 36% collection rate.

High-grade use in 1981 was up slightly from the 1980 level due to additional use in tissue products, which more than made up for the decline in exports.

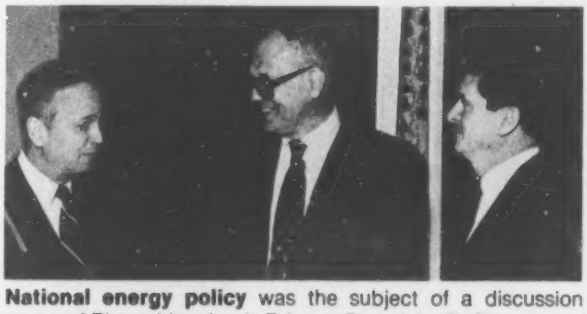
At the end of 1981 wastepaper use declined due to mill shutdowns, but in recent weeks production has returned to more normal levels, Edwards said. "Expanded demand for recyclable paper from both U.S. mills and export customers is projected to occur in the third and fourth quarters of this year."

Industry energy use cut by 30.4%

The U.S. paper industry, according to 1981 data, had reduced by 30.4% its use of fossil fuels and purchased energy per ton of output from the preoil embargo base year of 1972, said **Sara H. Freund**, newly appointed director of API's energy and materials department. "While total production of paper and paperboard increased by almost 18% during this time period, the industry's total fossil fuel and purchased energy use decreased by over 11%, and its fuel oil use by 40%."

She noted the industry has taken advantage of its own wood residues and spent pulping liquors, with these self-generated sources of energy accounting for 50.1% of the industry's total energy consumption in 1981 compared to 40.5% in 1971. □

Prospects for amending the Clean Air Act are discussed by Rep. Thomas A. Luken, author of a bill earlier endorsed by API chairman Brenton S. Halsey (right).



National energy policy was the subject of a discussion among API president Louis F. Laun, Rep. John D. Dingell, and API vice president Ronald J. Slinn.

Coating, filler pigments: generally available, pricing competitive

P&P's annual survey reports pigments are available even though demand is high. Pigment pricing is competitive as some paper markets slow

PULP & PAPER STAFF REPORT

☐ The demand for coated paper in 1981 reached record levels as shipments rose about 6.0% over 1980 to 4.95 million tons. This strong performance kept demand for coating pigments high. The uncoated printing/writing paper market did not perform as well in 1981 vs 1980, as most of the largest free-sheet grades saw demand drop. This resulted in a slightly reduced demand for filler pigments in 1981. The record 7.98 million tons of uncoated free-sheet shipments in 1980 contributed to a large surge in filler pigment demand. To meet this growth in demand for pigments, producers have expanded production capacity over the last few years. The result is that the tightness previously reported for some pigments has eased.

Most pigment producers report that demand in general has held up fairly well in the first part of 1982, although some producers whose product lines are concentrated in grades not performing as well overall note that business is slow.

There is considerable uncertainty about the performance of the overall economy in 1982, but most suppliers say they expect business to pick up in the third or fourth quarter.

Kaolin clays

Kaolin clays are produced in a variety of grades and a broad range of prices; thus, it is difficult to forecast general trends in pricing and availability. To simplify the understanding of current market conditions for clays, it is convenient to divide the market into three categories: (1) premium clays, (2) commodity coating clays, and (3) filler grades.

Paper industry demand for kaolin clay, the major pigment used, reached a new high in 1980 of 3.47 million tons, up almost 11% over 1979. The surge in coated paper consumption that occurred in 1981 kept demand for these clays at a very high level. The record 7.98 million tons of uncoated free-sheet shipments in 1980 led to a surge in filler pigment demand to almost 1.2 million tons. Offshore markets in 1980 were also a good market for suppliers with about 0.76 million tons of kaolin exported for use as coating/filler clays. Demand for filler clays in uncoated free-sheets in 1981 was to be reported good, but free-sheet paper production decreased from year-earlier levels.

Kaolin clay mining, production has grown over the last few years due to increased coated paper production. *(Photo courtesy Georgia Kaolin.)*

Supply of premium clays, such as anhydrous, high-brightness No. 1 and delaminated grades, has eased since these clays were in short supply in 1980-81 and are currently generally available. Delaminated grades, used in lightweight coated publication grades, are available even though demand has grown considerably since capacity to produce these clays has been expanded. Filler grades, which were reported to be in tight supply in 1980 and somewhat tight in 1981, are available, and shortages are not foreseen.

Installation of several spray dryers, kilns, and other processing equipment has eased the supply situation considerably for kaolin clays.

As coated paper markets softened in late 1981 and early 1982, demand from mills producing these grades eased. This, in combination with uncertainty concerning the performance of the economy, has resulted in a very competitive pricing situation. Discounting is reported to be prevalent and prices are, in some cases, at 1980 levels. Several suppliers report that spot orders are more common and as one producer noted, "Mills will ask what the best price is this month."

In general, prices rose 6% to 11% from those reported in last year's survey. The quoted price for air-floated filler grades is unchanged. One producer noted that the slower rise in the price of fuel, and thus in energy costs, have helped keep price increases at a slightly lower lever.

Calcium carbonate

Both natural ground and precipitated calcium carbonate (PCC) are reported to be in good supply. Demand for PCC grades is reported to be relatively stable, while ultra- or super-fine ground calcium carbonate usage continues to grow, according to some suppliers.

One producer noted that overall business is off, mainly due to weak paint, caulking, and sealing markets. Paint producers normally build up inventory in the spring, but this year many are not doing so due to the high cost of inventory as well as to uncertain business prospects. Instead, a number of paint suppliers are running seasonal specials. In general, carbonate producers report paper industry demand has held up fairly well relative to other markets.

One area in the paper industry that has attracted considerable interest during the last few years is alkaline sizing or papermaking. This could have a big impact on carbonate usage as a filler pigment and could open up a large new market. In general, suppliers report that interest in alkaline papermaking is at a very high level, but that actual growth in demand reported varies. One supplier noted that while many mills will run trials, the number switching over from the acid side is still limited. Since, as he noted, "In good times mills resist any change that may result in downtime and lost sales and in bad times they can't afford to switch." However, one producer claimed that four to six mills have switched over since late 1981. Prices advanced about 9.8% for ground carbonate, while price of precipitated grades rose 12.8%.

Titanium dioxide

Producers report that nonpaper markets have weakened considerably, and both rutile and anatase titanium dioxide (TiO_2) grades are readily available this year. As a result of more stable paper industry use, the market share for TiO_2 paper coating and filler applications has grown. One producer noted that only limited incremental expansions are planned in the future, so that when the economy—and thus overall demand for TiO_2—picks up, the supply/demand situation could change quickly. However, no shortages are foreseen until at least 1983-84.

Prices for TiO_2have advanced 9% to 12% over those reported in last year's survey. At least one producer has a $0.01/lb premium for dry over slurry shipments. Most producers eliminated this in the late 1970s.

Plastic and inorganic pigments

Plastic pigments used by the paper industry are reported to be in good supply, and prices increased about 8.7% since last year's survey.

Urea formaldehyde pigments are available and prices reportedly rose considerably during the year.

Table 1. **U.S. titanium dioxide pigment supply and demand** (short tons)

	1976	1977	1978	1979	1980[p]
Production	712,940	687,103	700,755	741,465	714,278
Shipments:[1]					
Quantity	711,774	696,552	714,547	753,780	731,546
Value (000s)	$594,846	$602,383	$621,909	$720,265	$795,734
Imports	68,497	114,810	117,708	104,968	97,590
Exports	20,580	16,336	37,812	49,369	42,126
Stocks, end of period	113,873	114,447	93,370	54,008	82,558
Apparent consumption[2]	753,947	785,003	801,728	836,426	741,192

r=revised. p=preliminary. n.a.=not available.
1. Includes interplant transfers
2. Apparent consumption=production plus imports minus exports minus stock increase.

Source: U.S. Bureau of the Census & U.S. Bureau of Mines.

Table 2. **End-use distribution of titanium dioxide pigment shipments** (percent of total shipments)

End use	1976	1977	1978	1979	1980
Paints, varnishes, lacquers	51.1	52.0	47.9	47.4	44.1
Paper	21.4	20.7	20.8	21.8	24.3
Plastics (except floor covering and vinyl-coated fabrics and textiles)	10.6	11.7	11.6	11.8	10.6
Rubber	2.7	3.1	2.8	2.9	2.1
Printing ink	2.0	2.0	2.0	1.9	2.8
Ceramics	1.9	1.9	2.1	1.9	1.7
Other	7.4	6.2	6.7	7.1	8.2
Exports	2.9	2.4	6.1	5.2	6.2
Total	100.0	100.0	100.0	100.0	100.0

Zinc-oxide pigments, which are used in reproductive paper applications, are in good supply, and prices rose a modest 6.4%. Reportedly, prices have fluctuated recently due to the change in the price of zinc metal. The use of photoconductive-grade zinc oxide pigments has decreased over the last few years, but is expected to remain stable.

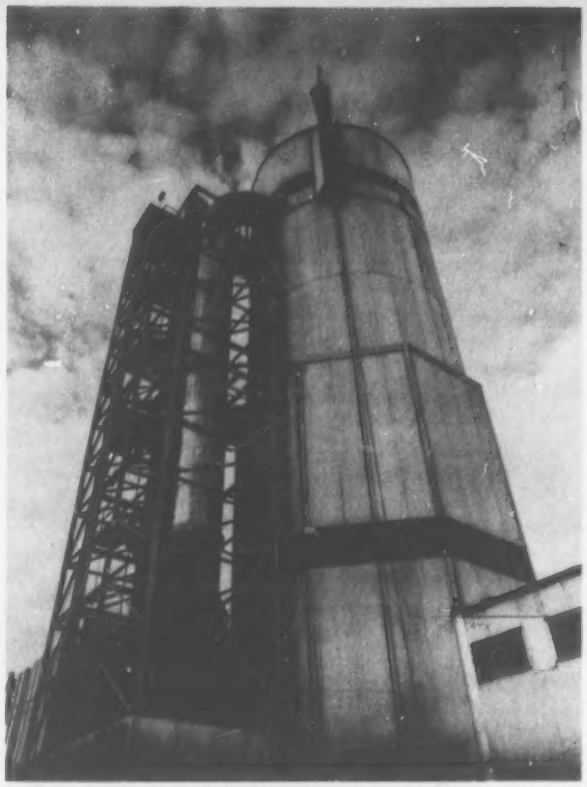
The price of silica-silicate pigments rose 8.2% over year-earlier levels. These pigments are reported to be available, with no supply problems anticipated.

The supply of talc has eased, and these pigments are generally available. Talc was reported to be in somewhat tight supply in 1980, but new capacity came on-stream last year. Talc prices advanced approximately 13% over 1981 levels. □

Table 3. **Kaolin used by U.S. paper industry**
(short tons)

	1978	1979	1980
End use			
Coating	2,238,397	2,273,883	2,282,914
Filling	764,597	858,305	1,182,929
Total	**3,002,994**	**3,132,188**	**3,465,843**
Exports			
Coating	523,629	580,435	691,446
Filling	52,011	53,941	72,429

Source: U.S. Dept. of the Interior, Bureau of Mines.



New capacity installed recently, such as this spray dryer at Georgia Kaolin, Dry Branch, Ga., has enabled pigment producers to meet demand without major shortages.

Table 4. **Prices and availability of commonly used pigments for coating and filler applications**

	Availability[1]		Price quotations ($)[2]		Year-to-year increase (%)
	1981	1982	March '81	March '82	
Calcium carbonate					
Ground natural, medium, ton dry	Market	Market	86-97	91-110[3]	9.8
Precipitated, bag, ton[4]	Market	Market	130-175	144-200	12.8
Hydrated alumina, slurry, ton	Market	Market	365	365	0
Kaolin, clay, ton[5]					
Anhydrous kaolin	Market to tight	Market	310	345	11.3
High brightness, No. 1	Market to tight	Market	128-133	133-144	6.1
Delaminated, standard grades	Market	Market	87-100	88-115	8.6
No. 1 coating	Market	Market	78-94	84-106	10.5
No. 2 coating	Market	Market	61-75	66-86	11.8
No. 3 coating	Market	Market	73	64-77	—
Filler,					
Water-washed	Market to tight	Market	46-58	51-62	8.6
Air-floated	Market	Market	30-40	30-40	0
Plastic pigments, lb	Market	Market	0.69	0.75	8.7
Satin white, 100 lb, drum 37% solids	Market	Market	10.50	12.00	14.3
Silica-silicates, ton	Market	Market	485-490	520-535[6]	8.2
Talc, bag, ton	Market	Market	134-160	158-174	12.9
Titanium dioxide					
Anatase, lb, dry	Market to tight	Market	0.64	0.69-0.73	10.9
Anatase, lb, slurry	Market to tight	Market	0.63-0.64	0.69-0.70	9.4
Rutile, lb, dry	Market	Market	0.69	0.75-0.80	12.3
Urea-formaldehyde, lb	Market	Market	0.78	1.15[7]	47.4
Zinc oxide, lb	Market	Market	0.50-0.51	0.5275-0.5475[8]	6.4

1. Availability terms are defined as follows: Very tight—on allocation or demand significantly greater than supply; Tight—demand slightly greater than supply; Market—supply and demand in balance or excess capacity available.
2. Prices are based on quotations for bulk f.o.b. plant shipments, except where noted, but do not necessarily represent the range in prices listed by all producers.
3. Higher-quality ultrafine and fine-ground calcium carbonate grades are available at $20-$40/ton more than the highest price.
4. Bulk shipments are $32-$45/ton lower.
5. Slurry shipments of kaolin clays are $6/ton lower on a dry basis. Shipment in 50-lb bags usually commands a premium of $20-$22 over bulk prices.
6. Silica-silicates having lower brightness and larger average particle size are available for $20-$35/ton less than the quoted prices.
7. Urea formaldehyde pigment having finer average particle size is available at $0.40/lb more than the quoted price.
8. Price per lb truckload quantities, add .05 less than truckload quantities.

Coated groundwood mills facing downtime—even free-sheet hurting

Printers cut inventories while direct mail and magazine demand slip; weakness postpones price hikes in coated free-sheet

By DAVID R. ALLAN, News Editor

☐ Coated paper outperformed most other sectors of the paper industry in 1981, and demand continues to reflect the preference of advertisers and publishers for high-quality graphics; but shipments this year will be hurt by the same recession that is leading to downtime in uncoated paper, newsprint, paperboard, and pulp.

About the best that can be said is that coated paper mills might not feel the economic downturn quite as severely as some other segments of the industry. But at the same time the largest part of the coated paper industry—the coated groundwood sector—faces a tougher time in the next three years than it has for some time; and it should see more downtime and possibly even permanent shutdowns, than most other sectors.

Coming after a year in which coated paper shipments rose by 6.0%, there were signs of weakness in demand as early as January 1982. Paper merchants reported reduced orders from printers, while magazines took 6.6% less coated paper in January than in the same month last year. Observers predicted a modest slackening from the hot pace of 1981 in direct mail promotion, and lead times for coated free-sheet fell from six or eight weeks in mid-1981 to two or three weeks in 1982's second quarter.

But worst of all, the previously invincible coated free-sheet industry apparently failed to get a price increase through in March and April, the first such failure in several years. At least one mill was reportedly still trying to put a 5% increase into effect in May, but it was not clear whether that move would succeed. Coated groundwood mills were also forced by market conditions to forego a price hike at that time, meaning that by this fall some mills will have gone 18 months between increases—assuming they can raise prices at that time.

Drop in direct mail ads

An apparent drop in spending for direct-mail advertising was blamed by one merchant for a decrease in his coated free-sheet orders. And one mill executive cited a Merrill Lynch study indicating that weakness in direct mail promotional activity began showing up in late 1981, with printers also reducing inventories. The unprecedented pace of direct mail in 1981 would be impossible to sustain in the middle of a moderately severe recession, he noted.

Shipments of coated free-sheet in January, along with reported consumption levels in February, confirm that market weakness had been growing in recent months. One executive estimated that shipments of coated No. 1—up 24.3% for all of 1981, and the hottest performer of the coated paper industry last year—rose only 2% in January, trailing the 3.6% rise of coated No. 2. The rest of the coated paper industry actually showed declines in January, the worst being No. 3 with a 9.2% slide. February shipment statistics were expected to confirm these trends.

Small companies can't afford it

Most important end-use for coated free-sheet—shipments to the commercial printing market—showed an increase in January of only 0.2% by all grades of paper, coated and uncoated; while coated shipments to that market slipped by 2.8% and Nos. 1, 2, and 3 fell by more than that percentage.

One merchant called that drop-off more of a lull than a long-term trend, and indicated that advertising agencies and advertisers he had polled said they had printing orders ready to go—when business picked up a little. "People had been spending more on advertising and promotion in hopes of offsetting a decline in their business, and maybe some of the intermediate- and small-size companies can no longer afford to do that," another merchant speculated.

Merchant commission added

Merchants began picking up signs from coated free-sheet mills early in the year that business was not what it had been. One mill reintroduced a No. 1 premium coated cover in the 100-lb basis weight range after several years of shunning the product. Another mill tried to raise the price of its No. 4 coated web offset paper by 5.2% effec-

tive Jan. 1, but then in February was forced to give back most of that increase, and even added a 5% merchant commission for the first time—in effect driving the price below the level that had pertained before Jan. 1. The mill also introduced a 55-lb paper in that grade for the first time.

Such changes in product and price are not unheard of in coated free-sheet, but they run counter to the trend of the past year or more, when strong demand and a lack of new capacity kept coated free-sheet on allocation and made regular price increases a matter of course.

Operating rates good

Operating rates are still very good for coated free-sheet. One mill executive estimated that the coated free-sheet industry in February ran at 92.3%, slightly down from January's 93.4%, but better than the 90.2% of uncoated free-sheet in February. Despite that continued strength in operating rates, the three companies that had announced price increases for March and April postponed or rescinded them.

Coated free-sheet operating rates should average only 90% for the next two years and then just 91% in 1984, one executive forecast, which led another observer to note that such a prediction doesn't leave much leeway for the hefty price increases of recent years.

Drop in shipments

Still another mill executive, Bartley Reitz of Champion International Corp., predicted, in a presentation before the Canadian Pulp & Paper Assn.'s annual meeting in Montreal in January, that increased poaching by coated groundwood on traditionally strong coated free-sheet terrain, such as commercial printing and direct-mail catalogs—with coated groundwood capacity growing by 9.2% in 1982, far in excess of any likely demand increases in traditional coated groundwood markets—will lead to a drop of 3% in coated two-sides Nos. 1 through 4 shipments this year, while No. 5 will rise by 5.5%.

This kind of a shipment increase for coated No. 5 obviously will not permit a continuation of current high operating rates, with 543,000 tpy of new coated groundwood capacity coming on-stream around the middle of this year. Coated groundwood operating rates in February were a surprisingly healthy 93.5%, compared with 89.8% in January. But Reitz, for one, told CPPA he believes the lightweight coated paper operating rate will decline to around 80% when the three new machines are in operation, and will remain "poor" until 1986.

Shipments by grade, C2S paper
(short tons)

Grade	January 1982	January 1981	% change
No. 1	14,400	14,200	2.0%
No. 2	29,200	28,200	3.6
No. 3	58,400	64,300	−9.2
No. 4	63,100	68,100	−7.4
No. 5	205,300	210,200	−2.3
Shipments by major end users			
Commercial printing			
Nos. 1-4	108,300	112,600	−3.8
No. 5	34,700	34,400	0.7
Magazines			
Nos. 1-4	30,700	38,400	−20.1
No. 5	132,300	136,000	−2.7

Book sales rising

One executive cited a Merrill Lynch Economics study that showed a six-month lag between changes in personal spending on goods and changes in consumption of coated paper and uncoated groundwood, indicating a decline this year in use of paper for merchandising purposes such as advertising and promotion.

The Dept. of Commerce predicted book sales, adjusted for inflation, will rise by 3.1% this year and then 3.2%/year for the next five years; and shipment figures for 1981 showed coated paper shipments to book publishers rose 7.3%, with only No. 5 declining. But coated book paper shipments dipped by 4.2% in January, and it is too early to tell whether 1982 will be as good to coated book paper as 1981 was.

What is clear is that printing/writing paper mills are going to be jockeying for position for the remainder of this year and beyond to cope with a significant capacity bulge in coated groundwood, uncoated groundwood, and newsprint. Coated groundwood, in particular, is expected to make life rough for uncoated groundwood, with the price advantage of the uncoated grades being eroded by the low demand and excess supply of the coated paper.

Coated vs uncoated

In the catalog area, for example, one executive estimates uncoated groundwood shipments were off by 6.3% last year, while coated No. 5 shot up by 14%. Uncoated groundwood still represented 60% of all catalog paper shipments, he said, with coated No. 5 representing nearly all of the rest. But in January, with shipments of all papers to catalog producers down by 7.9%, No. 5 fell only 5.2%, and uncoated groundwood was down by 14% for the month. In shipments to magazine publishers, book publishers, and commercial printers, No. 5 also outperformed uncoated groundwood, although that did not always represent a straight trade-off between the two

Table 1. **Coated paper capacity changes, 1980-83**

Company	Location	Capacity (000 tpy)	Year
COATED GROUNDWOOD			
Crown Zellerbach	West Linn, Ore.	15	1980
Fraser Paper Ltd.	Madawaska, Maine	80	1980
Great Northern	Millinocket, Maine	45	1980
International Paper	Jay, Maine	112	1980
Midtec	Kimberly, Wis.	125	1980
Boise Cascade	Rumford, Maine	160	1981
Consolidated	Wisconsin Rapids, Wis.	14	1981
Mead Corp.	Escanaba, Mich.	200	1982
St. Regis	Sartell, Minn.	168	1982
Weyerhaeuser	Columbus, Miss.	175	1982
COATED FREE-SHEET			
Mead Corp.	Escanaba, Mich.	20	1980
Westvaco Corp.	Luke, Md.	70	1980
Plainwell	Plainwell, Mich.	11	1981
Scott Paper	Skowhegan, Maine	200	1983

grades.

Not all of the new coated groundwood capacity this year will have a direct impact on uncoated groundwood mills. The new 168,000-tpy St. Regis Paper machine in Sartell, Minn., is intended for the same lightweight coated paper market that St. Regis already serves with so much market effectiveness—a market that supercalendered uncoated groundwood paper, for example, might be intended to serve as well. But the new Mead Corp. machine, 200,000 tpy of capacity coming on-line in about June, may be aimed at the 45-lb to 60-lb basis weight range and may even produce some coated free-sheet, merchants who have been contacted by Mead speculate.

New SC machine

The new 175,000-tpy machine that Weyerhaeuser Co. is starting up in Columbus, Miss., after the middle of the year, seems likely to be dedicated in large part to papers 40 lb or higher, with commercial printers and small specialized magazines in mind, according to industry speculation.

But the indirect effect of those three machines on the whole market will be substantial. And one grade of paper that will feel much of the impact will be uncoated groundwood, with a new machine of its own that started up in the U.S. in late 1981.

Madison Paper Industries brought its new 150,000-metric-tpy supercalendered-uncoated groundwood machine on-stream at perhaps the worst time for the supercalendered (SC) paper market as a whole, some industry executives say. That machine started up while uncoated groundwood mills were feeling the pinch of the recession, even before much of the rest of the printing/writing paper industry. U.S. shipments, the only reliable record of North American production, fell by 3.8% in 1981, while all coated grades were rising by 3.5% or more. CPPA capacity projections indicate thatCanadian groundwood specialties capacity will rise by 31%, or more than 200,000 metric tpy between 1980 and 1983.

Finns win deal

The world nature of the SC market was indicated by the recent startup of a 150,000-metric-tpy machine in Finland, and the closing of a deal between a Finnish company and Canada's *Today Magazine* to supply the publication with SC paper for the next two years—at a price reportedly well below the list price asked by Madison for its SC grades.

Publication paper manufacturers of every description are looking for a new niche to keep machines going, executives say, and the result is sowing price confusion in the market and inducing many mills to consider major changes in market thrusts. Boise Cascade Canada Ltd.'s Kenora, Ont., newsprint mill might get a supercalender, with the intention of producing a supercalendered newsprint-type paper similar to that being made at Consolidated-Bathurst's Grand Mere, Que., mill. And the Grand Mere mill will be getting a new supercalender this year to allow for a substantial increase in its SC paper output.

Madison's paper is equal to the best in North America in terms of quality, observers say, and is priced at $638/short ton for 34-lb paper, similar to the $642 St. Regis paper produced at Deferiet, N.Y., and Sartell, Minn.; CIP Inc.'s $625 product; and the competing Finnish imports, listing at $630. St. Regis makes about 120,000 tpy of SC paper when operating at capacity, while Finnish mills—aside from a recent deal to supply SC paper to Canada's *Today Magazine*—sell 15,000 tpy to the *New York Times*. The *Times* buys another 15,000 tpy from Madison.

Premium roto on market

CIP makes some SC paper at Trois Rivieres, Que., and is said to be considering making an SC newsprint at Gatineau, Que. Complicating the overall market picture even more (one observer described the trend in groundwood specialties products and prices today as one of "fragmentation") was Madison's first-quarter action in offering an SC sheet called SCX; it's different from its regular SC paper and priced 5% over premium roto prices, in addition to some startup tonnage that was offered before that. Madison and St. Regis are also said to be putting about 40,000 tpy each of premium roto on the market, to utilize under-used SC machine capacity; and Great Northern Nekoosa is reported to have contacted printers about the possibility of selling them some SC paper from its Maine operations.

The number of customers for SC paper is almost as small as the number of suppliers, and it is not clear that the customer base is growing as fast as the range of producers. Catalog printers are probably the SC industry's most important customers, and Madison is said to have made some inroads into the Montgomery Ward and JC Penney accounts. St. Regis apparently sells SC paper to Sears on a cost-plus basis; but a similar deal with the other two major catalog producers might not have prevented Madison from selling them some paper at St. Regis' expense.

So far, few SC conquests have been at the expense of coated paper, however. *Consumer Reports* is rumored to be considering a move to SC in an effort to trim costs, although it is thought to be undecided between Madison and St. Regis papers. Some religious publications and fraternal-order magazines are looking at SC paper, and one consultant thinks premium roto and SC are the ideal paper for heat-set offset printers.

Print quality on SC paper is better than for typical uncoated groundwood offset paper and, in some cases might even be better than premium roto, although offset and premium roto are $100/ton or more cheaper. On the other hand, LWC is higher than SC in list prices by about $130—although recent transaction prices for LWC spot orders are well below list—so SC is well-positioned between LWC and its chief uncoated groundwood competitors.

Despite the seeming attractions of SC paper, it has not yet set the paper industry on fire. Madison seems destined to become at least a minor force in the premium roto market just to keep its new machine busy, and when the new machine is busy with SC orders, the company apparently will restart its old 40,000-tpy No. 1 SC machine, currently idled, to produce roto paper. That sheet will have a clay content of 4% or 5%, benefiting from broke from the new SC machine. That split personality, also seen in St. Regis' increased involvement in the roto market and the interest of other companies in SC paper, could be typical of the confusion in groundwood specialties as long as publication papers remain in oversupply. □

Industry prospects, problems for next ten years viewed by expert

Leading industry consultant examines projected growth in demand, supply to 1990, discusses possible solutions to mounting capital cost problems

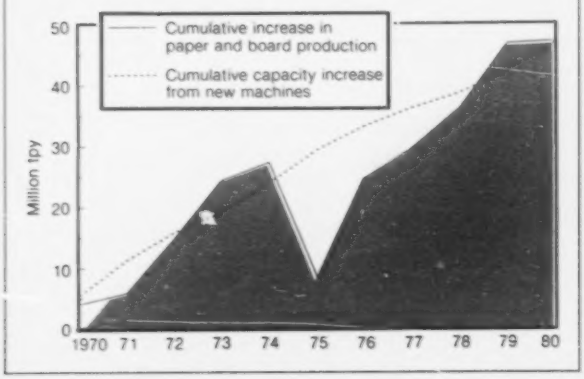
By JAAKKO PÖYRY

Dr. Pöyry is chairman of the board of Jaakko Pöyry International Oy and affilated companies. This article is from an address to the Survivors' Club annual luncheon, March 8, 1982, Washington, D.C.

Table 1. Changes in world paper/paperboard production capacity in the 1970s

	Number of operating machines	Capacity (million metric tons)
Paper machines, 1969	9255	169.4
Shutdowns, 1971-80	2195	16.7
New projects, 1971-80	124	20.2
New machines, 1971-80	945	41.7

Figure 1. **Cumulative changes in world paper production and paper machine capacity**



□ In the 1970s, the structure of the paper industry changed considerably. World production increased by about 3% per year, making a total increase during the decade of 45 million metric tons (all tonnages given are metric). This increase came about as follows:

- There were 2195 machines with a total annual capacity of 17 million tons shut down; these shut-down machines had an average capacity of 7750 tpy/machine.
- Some machines were rebuilt, increasing their total capacity by about 20 million tons, or 14,000 tons/machine.
- A total of 924 new paper machines were built, with a combined capacity of about 42 million tpy, and an average capacity of 45,500 tpy.

At the beginning of the 1980s, the number of machines in production around the world, excluding China, was 9120. These machines had an average capacity of

Figure 2. **World distribution of paper and paperboard machine capacity in 1981**

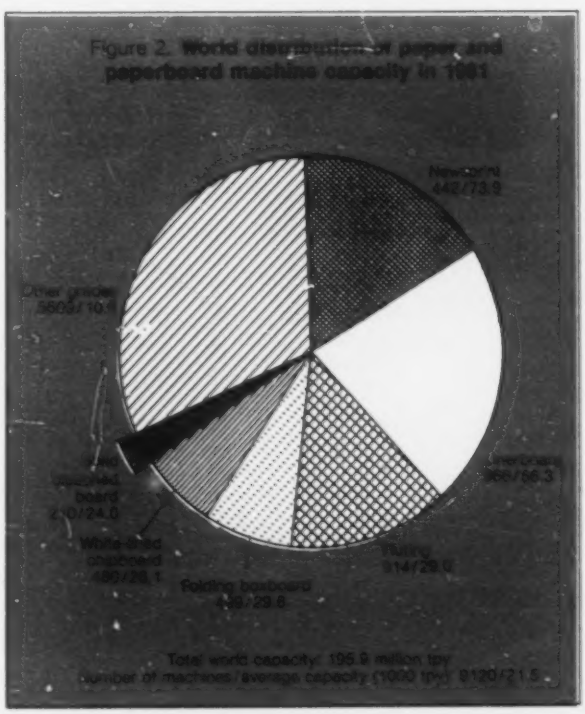
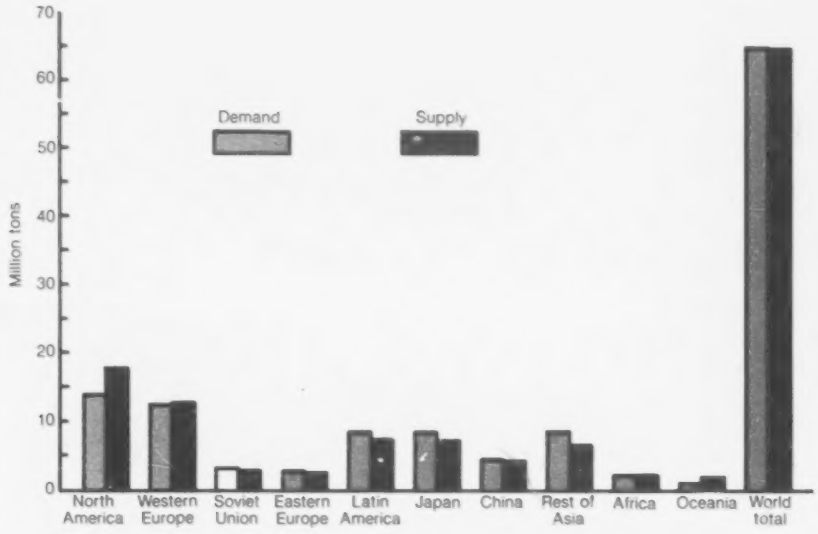


Figure 3. **Paper and board demand and supply growth, 1980-1990, by region**

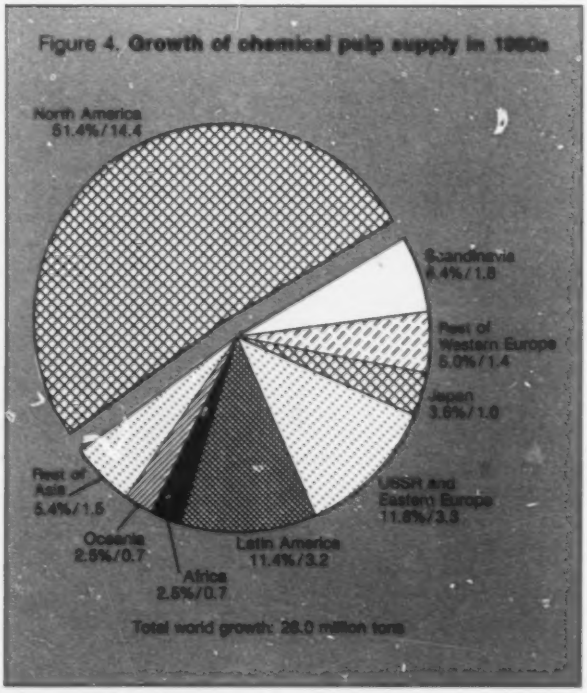


21,500 tpy and an average age of 30 years. Every third machine in operation in 1970 has, since then, either been shut down or rebuilt—not an unhealthy development.

Innovations such as television and computers have not significantly held back paper demand. Thus, it can be anticipated that further developments in electronic media will have only a limited effect on total paper demand.

Paper and nonwoven webs have replaced textiles to some extent. On the other hand, plastics and bulk systems, especially in the packaging industry, have been attacking the market for paper and paperboard. Increased attention has been—and must continue to be—paid to product development through developing converted and combined products. Tetrapak is a good example of a combined product rapidly increasing its market share; by 1985, this product may have doubled its present sales volume. There are similar examples in hygienic tissues.

Figure 4. **Growth of chemical pulp supply in 1980s**



Future demand, capacity

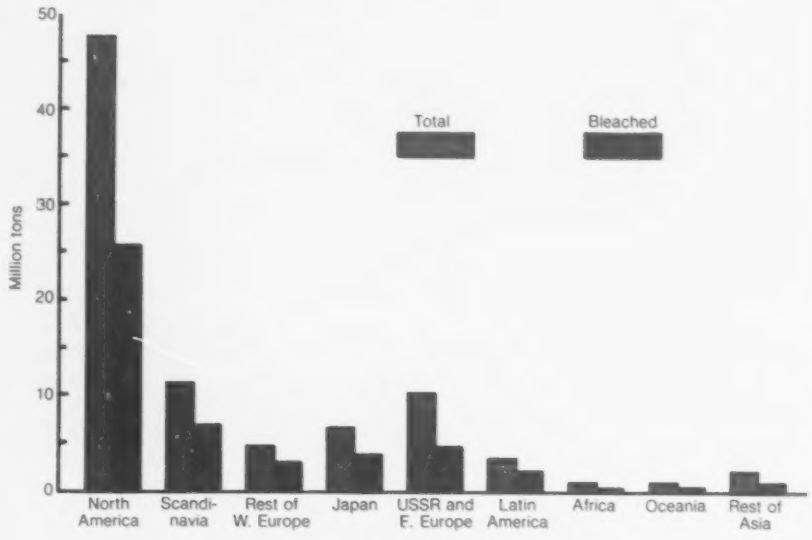
Forecasts for paper and paperboard demand have been adjusted downward. Jaakko Pöyry's recently completed forecast indicates that the increase in annual demand in the 1980s will be about 65 million tons. This is an average increase of 3.3%/year, slightly above that in the 1970s but far below growth in the '50s and '60s. In 1990, total paper demand will be 240 million tons.

In total tonnage and per capita use, North America, Western Europe, and Japan are still in the lead. According to Jaakko Pöyry estimates, annual U.S. consumption will grow from the current 605 lb to 750 lb per capita in 1990. Growth of demand in Third World countries will be most remarkable during the 1980s. This raises the obvious question of how this demand can be met.

Western European demand growth rate will be somewhat greater than in North America, and will most likely be matched by an equal increase in local supply. Joint efforts of EEC countries to finance the modernizations needed in their paper industries will be an essential factor in achieving an increase in paper supply. Western Europe and Japan will become increasingly dependent on imported fiber, mainly in the form of chemical pulp.

The increase required in chemical pulping capacity in the 1980s totals some 40 million tons. Capacity from rebuilds will be 12 million tons, so capacity needed through new mills and major expansions will be about 28 million tons. This new capacity will be built mainly in North America and Third World countries.

Figure 5. **Production of chemical pulp by region in 1979**



World totals (million tons): Pulp = 87.0; Bleached pulp = 47.2

With technology available today, it is possible to build a pulp mill which does not cause environmental problems. Pulp and paper machine suppliers have sufficient capacity to meet future needs, as do engineering consultants and contractors. Nor will human resources be a major constraint, although educational/social problems can be expected in regions without industrial traditions.

Trends in mill investment costs

Investment is the key issue and key problem in deciding whether to build a new mill. Inflation, interest rates, and taxes all affect investment cost. Costs of raw materials, energy, and labor, together with capital charges on the investment, determine whether a new investment will be profitable at a particular price level.

Individual companies embarking on a project cannot influence most of these cost factors, but they can control the investment itself, within its technological limits. The trend of growing investment costs must be broken.

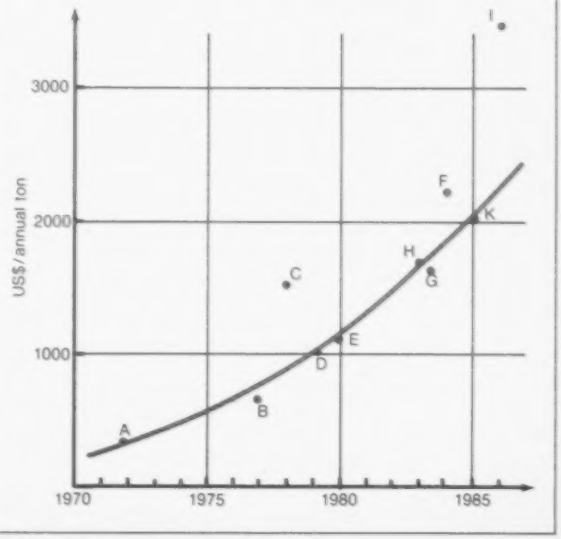
The investment cost of pulp mills that started up in the early 1970s was about US$350/ton of annual capacity. By the late 1970s, the unit investment cost had risen to US$850. In the case of a big Brazilian mill started up in 1978, the investment of US$1500/ton of annual capacity, including the infrastructure, was astronomical. But current investment cost estimates are US$1800 to $2000/annual ton of capacity in the industrialized countries, and up to US$3000 to $3500/ton in developing countries. Rising costs mean that the price of long-fiber pulp should now be about US$750 to $775/ton c.i.f. Rotterdam, to make new capacity profitable. In 1985, the price required will be about US$850 to $900/ton.

Only market forces will decide what the prices will be. Since mills and companies around the world have very different capital and cost structures, it is difficult to believe that pulp prices could reach these figures, except in an exceptional boom year. Regardless, new ways must be found to decrease the investment cost.

Modernizing old mills—and increasing their capacity—could give considerable savings, at least in the medium term. For example, modernization of a Swedish pulp mill, now under way, will increase its production from 240,000 to 280,000 tpy. Operating costs will decrease by US$75/ton, mainly due to reduced labor costs and better energy economy. Annual profit after depreciation will improve by almost US$20 million, with investment per ton of annual capacity only US$680.

Another pulp mill is being modernized to increase

Figure 6. **Trend in investment costs, bleached kraft market pulp mills**



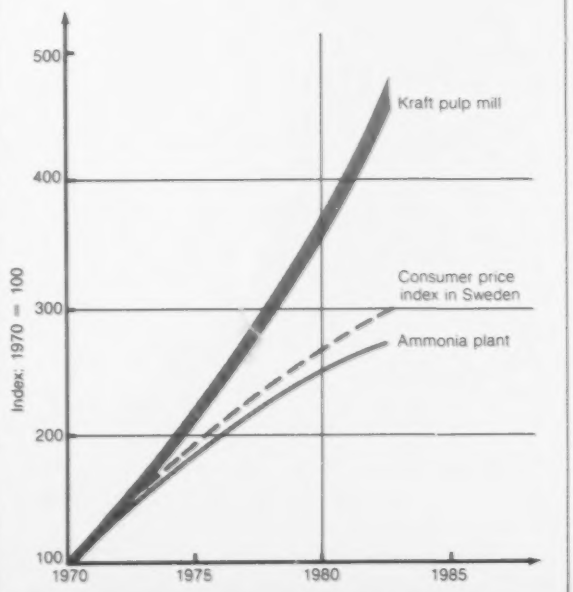
production from 100,000 to 300,000 tpy, the investment being about US$1000/ton of new annual capacity. Operating costs will be almost as low as that of a new mill.

Although modernizing old mills and adding new capacity at the same time is a sensible approach, it will hardly be enough to cover the increased demand for chemical pulp. It is time to allocate more money and resources to the development of the process itself. And one process development that is particularly needed now is a simpler and cheaper recovery process—a widely recognized need. A better recovery process represents probably the biggest saving potential in process development.

Improving project implementation

In the chemical industry, which is similar to the chemical pulp industry, capital costs increases have been kept to a reasonable level. This is only partly due to the chemical industry's faster technical development; it is due mainly to better control of big construction projects.

Figure 7. **Trend in investment requirements, kraft pulp mill vs ammonia plant**



Basic engineering involved in studying the feasibility of a project is relatively limited, and is aimed at estimating capital costs. After the go-ahead decision is made, engineering aims at the earliest possible purchase of main equipment. Delivery time of the main equipment fixes the whole project implementation time schedule. In the limited time available, there is insufficient time to evaluate alternative processes or to prepare enough detailed documents to request fixed-price offers for construction and installation. Under this routine, detailed engineering is effectively tailor-made for each project.

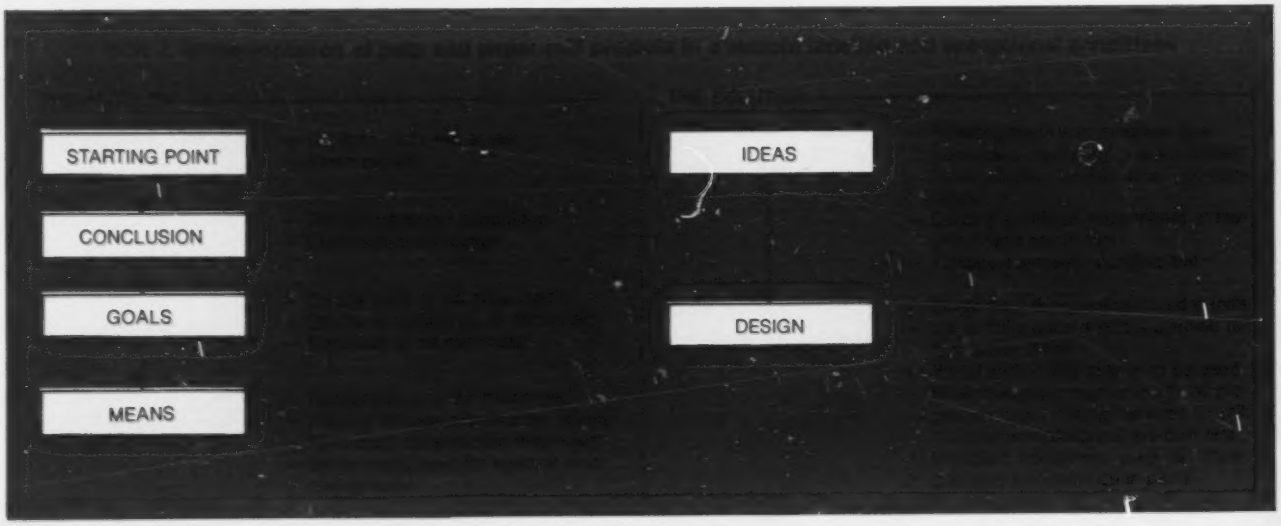
In conventional project implementation, there are several interrelated decisions, with the consequent risk of delays or serious confusion, if even one important decision is not made in time. Inaccuracy in material specifications may also cause delays and cost overruns.

Project implementation can be improved. The engineering firm should be selected well before the go-ahead. Enough time should be allotted for evaluating alternative processes and construction methods, for detailed engineering, and for preparing detailed documents. Fixed-price bids for equipment, construction, and installation can be sought as soon as detailed and accurate specifications are available. With turnkey contracts, competition is possible only if based on such specifications.

Benefits of this approch are: (1) lower equipment, construction, installation, piping and other costs, if bids are based on detailed, accurate documents; (2) lower interest costs because of a shorter period between purchase of equipment and startup; and (3) improved budget control, with earlier warning of possible cost overruns.

It can be argued that the total time to implement a project would be increased with longer basic and detailed engineering. But if engineering is started at the same time as negotiations on financing and environmental permits, total implementation time hardly increases. However, if a negative decision has to be taken for financial or other reasons, the cost of engineering still has to be paid.

In the Japanese paper industry, equipment suppliers' delivery times are extremely short, as are project implementation times. Obviously, the Japanese have a good planning system. They apply more standardization and,



more importantly, do much of the project work in advance, before final go-ahead and before equipment orders are placed.

Placing the blame

Who is to blame for current inefficient and costly planning and implementation practices, so different from, for instance, those in the dynamic and successful chemical industries? There are basically three different culprits—investors, financers, and engineering firms.

Investors have not fully realized the importance and time required for engineering. The same planning procedures suitable for rebuilding existing mills are used in big projects. When the decision to go ahead with a US$500- to $600-million project is made, one would expect its implementation would be entrusted only to a specialized organization. However, this is often not the case. There are even big companies which consider it a question of honor to handle projects on their own, keeping quiet about budget overruns and troublesome startups.

Financers have not demanded more accurate plans, trusting instead in the experience of forest industry companies. Yet these companies may be quite inexperienced in handling big projects with large inputs from outside services.

Engineering firms have not been able to develop lower-cost systems and prepare general plans for various climatic and other mill conditions; instead they tailor the engineering to each individual project.

Thus far, Jaakko Pöyry's group of companies has had the opportunity to study the type of approach outlined here in one case only. This was a pulp mill project in a region with a harsh climate and little infrastructure.

In tropical and arctic areas, project implementation times are prolonged several years by difficult construction conditions. Construction time may be restricted to a few months per year by heavy rainfall or cold winters.

In identifying problems involved in reducing investment costs, various ideas are analyzed and the best design principles found. In the case of this pulp mill, the answer was maximized prefabrication. rapid construction of a working environment for starting installation, and standardized transport systems. As a result, construction time was cut by 25%, and mill site work by about 30%.

Some of these ideas can be applied elsewhere. Different climatic or other features would naturally lead to different approaches. However, by taking a fresh look at these problems, some positive action is taken toward building better-planned, lower-cost forest industry units, provided proper time is given for the planning phase. □

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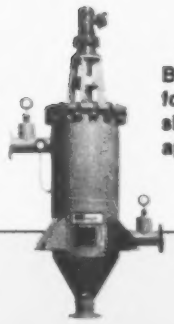

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Sodium hydrosulfite demand slows, but will pick up

By BARRY SHOCKETT

A combination of the recession and a world-wide surplus of sodium hydrosulfite ($Na_2S_2O_4$) is causing a slowdown in the U.S. $Na_2S_2O_4$ market. Exports dropped to less than 16,000 tons in 1981, and helped reduce the industry operating rate to 93% vs 97% in 1980.

All of the hydrosulfite used in Canada is imported except for Borol, which is produced on-site. (The precursor is also imported). Paper industry use dominates the Canadian market, and overall demand and paper industry use rose slightly in 1981.

U.S. statistics for sodium hydrosulfite* (000 short tons)

	1978	1979	1980	1981e
Nameplate capacity	65	70	75	76
Production	59.4	68	73	71
Shipments	57.2	68.3	73	n.a.
Imports	—	—	0.1	0.4
Exports	12.1	13.9	18.1	15.6
Apparent consumption	45.1	54.4	55	55.8
Pulp and paper	13.5	13.3	16.5	16.7
Textiles	18	21.8	22	22.3

*Not including on-site production via Borol
Sources: Bureau of Census, industry estimates

Canadian statistics for sodium hydrosulfite* (000 tons)

	1978	1979	1980	1981e
Production	—	—	—	—
Imports	11.2	10.8	10.5	11.6
Total demand	11.2	10.5	10.8	11.6
Pulp and paper	9.9	8.8	9.6	10.2

*Excluding on-site production via Borol

SODIUM HYDROSULFITE

UNITED STATES

Uses: Sodium hydrosulfite is used to bleach mechanical/deinked pulps. The textile industry is the largest end-user (vat dyeing cotton). Others include clay refining and specialty chemicals.

Demand: The paper industry used 16,700 tons (30%) of sodium hydrosulfite for pulp bleaching (excluding on-site production) in 1981. Total consumption was 56,000 tons, with textile applications using about 22,500 tons or 40%. Imports are not a major market factor, with less than 500 tons imported last year. With an estimated 8000 tons (100% basis) produced from Borol, the paper industry consumed almost 25,000 tons.

Exports in 1981 were down almost 14% from the 18,000 tons that were exported in 1980. This reversed the upward trend in exports since 1978.

Sources: Virginia Chemical, the largest supplier, acquired Royce Chemical (the number-three firm) late in 1981. There are now only two producers, the other being Olin. Thiokol's Ventron Div. is the sole U.S. supplier of Borol.

Availability: $Na_2S_2O_4$ plants have operated at an average 95% since 1978. If exports increased faster than domestic demand, capacity expansions would be required. However, no problems of supply are foreseen for U.S. consumers. 1981, market; 1980, market; 1979, market; 1978, market.

Pricing: The last price change for sodium hydrosulfite was in Dec. 1, 1981, when the price of proprietary blend, f.o.b. producing point, rose 2.5¢/lb to 60¢/lb. A similar increase is forecast for mid-year. Pricing history: 1981, 55¢-60¢/lb; 1980. 43.5¢-55¢/lb; 1979, 41/5¢-43/5¢/lb; 1978, 39.5¢-41.5¢/lb.

Forecast: U.S. demand for sodium hydrosulfite will probably be flat in the first half of 1982 but should pick up late in the late third, or early fourth quarter. Overall 1982 demand should parallel 1981, but it depends on the overall economy. Paper industry use could increase from 1981.

CANADA

Uses: Sodium hydrosulfite is mainly utilized by newsprint and some groundwood specialty mills. It is used as a bleaching agent.

Demand: In 1981, Canadian paper mills consumed 10,200 tons of merchant grade sodium hydrosulfite and an estimated 8500 tons of Borol. Total merchant demand was about 11,600 tons; thus, the paper industry dominated the market, using 88%. In 1980, total merchant demand was 10,800 tons, with pulp bleaching accounting for 9500 tons. An estimated 7880 tons of Borol were consumed in 1980. The textile industry used the remaining 12% of merchant grade for vat dyeing of cotton.

Sources: There are no domestic producers. VirChem imports from the U.S. and many distributors import from Europe and Japan. Borol solution is imported from Thiokol Corp.'s Ventron Div.

Availability: No shortages are foreseen due to the small size of the Canadian market. Blended hydrosulfite: 1981, market; 1980, market; 1979, market.

Pricing: Following an 8% price hike in 1981, blended sodium hydrosulfite rose 5.4¢/lb on Jan. 1, 1982 to 69.4¢/lb, delivered in eastern Canada. Nonblended $Na_2S_2O_4$ dropped from 71.5¢/lb to about 61¢/lb in late 1981 under pressure from European imports. Pricing history: Blended, 1981, 59¢-64¢/lb; 1980, 51.4¢/lb; 1979, 50.5¢/lb. Nonblended: 1981, 66.4¢-71.5¢-61.2¢/lb; 1980, 56¢-66.4¢/lb; 1979, 47.5¢-56¢/lb.

Forecast: Newsprint mill downtime in 1982 is expected to reduce consumption of merchant hydrosulfite by about 10%. Demand should pick up again and grow 8%-10%/year until the mid-1980s. Borol use should increase about 10% in 1982 due to the start up of several on-site facilities in both eastern and western Canadian paper mills.

Mr. Shockett is consulting editor-chemical markets for PULP & PAPER.